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Part VIII

Environmental Protection Agency

Standards of Performance for New Stationary Sources; Surface Coating of Metal Furniture

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 60

AD-FRL 1533-7]

Standards of Performance for New Stationary Sources; Surface Coating of Metal Furniture

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule and notice of public hearing.

SUMMARY: The proposed standards of performance would limit emissions of volatile organic compounds (VOC) from new, modified, and reconstructed metal furniture surface coating facilities. The proposed emission limit is 0.70 kilogram of VOC per liter of coating solids applied. Reference Method 24 would be used to determine the VOC content or organic coating materials and Reference Method 25 would be used to determine the VOC concentration in an exhaust gas stream. Both reference methods were promulgated on October 3, 1980, (45 FR 65956). The proposed standards implement Section 111 of the Clean Air Act and are based on the Administrator's determination that surface coating of metal furniture contributes significantly to air pollution. The intent is to require new, modified, and reconstructed metal furniture surface coating facilities to use the best demonstrated system of continuous emission reduction, considering costs, nonair quality health, and environmental and energy impacts.

A public hearing will be held to provide interested persons an opportunity for oral presentation of data, views, or arguments concerning the proposed standards.

DATES: *Comments.* Comments must be received on or before February 8, 1981.

Public Hearing. A public hearing will be held on January 9, 1981 beginning at 9:00 a.m.

Request to Speak at Hearing. Persons wishing to present oral testimony must contact EPA by January 2, 1981.

ADDRESSES: *Coments.* Comments should be submitted (in duplicate if possible) to: Central Docket Section (A-130), Attention: Docket Number A-79-47, U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460.

Public Hearing. The public hearing will be held at the Environmental Research Center Auditorium, Research Triangle Park, N.C. Persons wishing to present oral testimony should notify Ms. Deanna Tilley, Standards Development Branch (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5477.

Background Information Document. The Background Information Document (BID) for the proposed standards may be obtained from the U.S. EPA Library (MD-35), Research Triangle Park, North Carolina 27711, telephone number (919) 541-2777. Please refer to "Surface Coating of Metal Furniture—Background Information for Proposed Standards," EPA-450/3-80-007a.

Docket. Docket No. A-79-47, containing supporting information used in developing the proposed standards, is available for public inspection and copying between 8:00 a.m. and 4:00 p.m., Monday through Friday, at EPA's Central Docket Section, West Tower Lobby, Gallery 1, Waterside Mall, 401 M Street, SW, Washington, D.C. 20460. A reasonable fee may be charged for copying.

FOR FURTHER INFORMATION CONTACT: Mr. Gene W. Smith, Standards Development Branch, Emission Standards and Engineering Division (MD-13), U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711, telephone number (919) 541-5421.

SUPPLEMENTARY INFORMATION:

Proposed Standards

The proposed new source performance standards (NSPS) would apply to new surface coating facilities at metal furniture manufacturing plants. In addition, existing surface coating facilities would be covered if they were to undergo a modification that would result in an increase of VOC emissions or a reconstruction. Emission of VOC from each affected facility would be limited to 0.70 kilogram of VOC per liter of coating solids applied. This numerical emission limit takes into account the mass of VOC per liter of coating solids in the paint and the transfer efficiency with which it is applied to yield the mass of VOC per liter of coating solids applied. The numerical emission limit could be met by the use of high solids coatings (i.e., 68 percent by volume solids coating with a solvent density of 0.88 kilogram per liter) applied at a 60 percent transfer efficiency. Transfer efficiencies of 60 percent or greater can be attained when applying high solids coatings with manual or automatic electrostatic spraying equipment.

The proposed standards could also be met with the use of other coating types applied by various application techniques. Examples of these include waterborne coatings (equivalent in emissions reduction to a 75 percent solids coating) applied by electrostatic, air or airless spray, dip, electrodeposition, or flow techniques; powder coatings (100 percent solids) applied by electrostatic spray or fluidized bed; and paints with lower solids content (less than the 68 percent by volume solids coating) if the increased solvent content is offset by higher transfer efficiencies.

The proposed standards could also be met with an emission control system which consists of a capture system and an emission control device or a combination of an emission control system and a low-organic-solvent coating (high solids or waterborne). Either of these methods would be acceptable if the owner or operator could show the Administrator that the control technology would achieve the proposed standards.

Although none of these control options are universally applicable, at least one option is available for all products produced by the metal furniture industry.

To determine compliance, performance tests would be conducted each calendar month. This would consist of calculating the monthly weighted average mass of VOC per volume of coating solids applied using the transfer efficiency values provided in the proposed standards. The owner or operator would obtain the information necessary to calculate emissions from formulation data supplied by the manufacturer of the coating or from an analysis of each coating by Reference Method 24 or by an equivalent or alternative method acceptable to the Administrator. Coating and organic solvent usage data would be obtained from company records. In the case of a question regarding the VOC content of coatings, Reference Method 24 would serve as the means by which the VOC content of the coating, and the resultant emissions, would be determined. Violations would be reported within 10 calendar days after the end of the calendar month.

When an incinerator is used to achieve compliance, Method 25 would be used during an initial 3-hour compliance test to determine the control efficiency. During this initial compliance testing with Method 25 the incinerator combustion temperature would be recorded and reported. The proposed standards also contain performance test provisions for an affected facility that uses an organic-solvent recovery system to attain compliance. The owner or operator would be required to calculate, by the equations contained in the proposed standards, the uncontrolled VOC emissions from each affected facility and the emissions reduction achieved by the recovery device. The owner or operator would also be

required to record daily the amount of organic solvent recovered by the system.

EPA estimates that the proposed standards would affect 800 new and 1,200 modified or reconstructed sources between 1980 and 1985.

Summary of Environmental, Energy, and Economic Impacts

The typical "uncontrolled" metal furniture manufacturer applies paint that contains about 35 percent by volume solids. In contrast, a Control Techniques Guideline (CTG) document entitled "Control of Volatile Organic Emissions from Existing Stationary Sources, Volume III: Surface Coating of Metal Furniture" (EPA–450/2–77–032) which defines reasonably available control technology (RACT) recommends that a 60 percent by volume solids coating be adopted by States in their State Implementation Plans (SIPs). The same metal furniture manufacturer applying a CTG-complying coating would emit about 60 percent less VOC than when applying the uncontrolled coating. It is estimated that this CTG recommendation could reduce emissions of VOC from about 49.8 megagrams per year to about 19.4 megagrams per year. The proposed standards would reduce VOC emissions to about 13.7 megagrams per year for the typical plant which is an additional 30 percent emission reduction below the CTG recommendation. Also, when compared to uncontrolled emissions, the proposed standards would reduce national VOC emissions from new, modified, and reconstructed facilities by about 53 gigagrams during the fifth year.

The impact of the proposed standards on water pollution would depend on the control option selected. For example, water use in spray booths would be unnecessary when powder coatings are used. Therefore, there would be a decrease in wastewater discharged when the proposed standards are met by employing powder coatings. Wastewater discharges could be expected not to increase for plants which utilize high solids and waterborne coatings. The quality of wastewater discharged is expected to remain the same for plants that apply high solids coatings when compared to that from plants that apply solvent-borne coatings. However, the quality of wastewater discharged from plants applying waterborne coatings could be reduced because these coatings contain water-miscible solvents. Finally, where incineration is used, the water pollution impact would depend on the type of coating used.

The impact on solid waste generation also depends on the control option selected. Powder coatings are generally recycled so that there is little waste. High solids and waterborne coatings produce about the same amount of solid waste as solvent-borne coatings. The use of emission control systems on a bake oven is expected to have no effect on the amount of solid waste generated from the types of coatings applied.

Energy savings could be possible for all uncontrolled coating facilities that employ any of the available control options to meet the proposed standards. Compliance with the proposed standards by using a 68 percent of volume solids coating would result in an energy savings of up to 8.9 petajoules over the first 5 years of the proposed standards due to a decrease in solvent usage. This is equivalent to approximately 230,000 cubic meters (1.45 million barrels) of crude oil.

For a typical metal furniture manufacturer complying with the recommended CTG, energy requirements would vary depending upon which control option is employed to meet the proposed standards. Energy consumption would decrease by about 20 percent (1500 gigajoules) if powder coatings were used. Energy consumption would increase, however, with the use of waterborne coatings or with incineration plus a CTG coating by about 3 percent (230 gigajoules) and 7 percent (520 gigajoules), respectively.

The economic impact summary presented in this section is based on the total anticipated costs of constructing and operating a new coating facility. Many of the control options considered involve a redesigning of the coating facility rather than simply adding equipment to an existing design. Usually powder coatings and waterborne coatings, for example, could not be applied in a spray booth equipped to use a solvent-based coating. For this reason, the capital and annualized costs represent a comparison of the total cost of each type of controlled facility rather than an incremental difference in the cost of each type of facility.

For a new typical spray coating facility with two painting lines the initial capital and annualized costs do not vary significantly regardless of which control option would be employed to comply with the proposed standards. Capital costs for each facility using the different control options are expected to range from about $960,000 (high solids coatings) to about $1,200,000 (waterborne coatings). The capital cost for a typical CTG coating facility or a typical uncontrolled coating facility would be about $960,000. The industrywide incremental capital cost of complying with the proposed standards over the first 5 years is expected to range from zero to $252,000,000 depending upon line changes because of the selected control option. This range is based on the projection of 2,000 affected facilities during the first 5 years of the proposed standards. The initial annualized costs for the different control options would range from about $600,000 to $700,000. These initial annualized costs would be comparable to the initial annualized costs for a typical CTG coating facility ($620,000) and a typical uncontrolled facility ($630,000).

Total annualized costs (or savings) vary depending upon which control option would be employed to comply with the proposed standards for all new, modified, and reconstructed spray coating plants (e.g., large, medium, and small sizes). For these facilities the fifth year industrywide annualized costs for incineration, and for waterborne coatings, would be about $18,000,000. An industrywide savings of $15,000,000 would result in the fifth year if high solids coatings were used. The total industrywide annualized costs for powder coatings could vary from a savings of $2,000,000 to a cost of $126,000,000 depending upon achieved coating thickness and other factors. The projected industrywide annualized cost to comply with the proposed standards, based on an anticipated mix of low-organic-solvent coatings, would be about $11,000,000.

The economic impacts of the proposed standards were evaluated based upon reduced profitability, inflationary impact, and expected price increases. The highest profit impairment is expected for small metal furniture manufacturers (4,000 liters of coatings consumed annually) regardless of control option. The maximum impact could result in about a 1.3 percent increase in the wholesale price of a metal furniture product from the small manufacturer.

Several industry representatives submitted comments, following the National Air Pollution Control Techniques Advisory Committee (NAPCTAC) presentation, related to the anticipated economic impact of the proposed standards. These comments, along with the supporting data provided, have been incorporated into the BID and are reflected in the preceding summary. However, the Administrator welcomes additional comments related to the economic impact analysis. Comments should contain specific information and data pertinent to the issue and suggested alternative courses of action that would avoid this impact.

Rationale

Selection of Source for Control

The "Priority List and Additions to the List of Categories of Stationary Sources," promulgated at 44 FR 49222 on August 21, 1979, ranked sources according to the impact that the standards promulgated in 1980 would have on emissions and public health in 1990. The surface coating of metal furniture is listed as a minor source category on this listing. This classification as a minor source is due primarily to the fact that individual metal furniture surface coating facilities typically emit less than 100 tons of VOC per year. However, the Priority List states that "the metal furniture coating industry is also a significant source of VOC emissions, and there are over 300 existing facilities with the potential to emit more than 100 tons per year."

There are approximately 1,400 metal furniture manufacturing establishments in the United States which paint their products. These metal furniture manufacturers are located throughout the country and are generally situated in highly populated urban areas. In fact, 70 percent of the industry is concentrated in nine highly populated states. The size range of these establishments and the types of metal furniture products produced are diverse. A large metal furniture manufacturer may have six or more coating lines while a small manufacturer may have only one coating line. The total number of coating lines in this industry is estimated to be about 3,100. This is approximately two coating lines for each establishment, which is considered to be a "typical" manufacturer. This typical manufacturer would consume from 67,600 to 87,000 liters of coating annually, and paint 780,000 square meters of metal furniture products. About 85 percent of the new coating lines are expected to apply paint by spraying methods.

The metal furniture industry emits about 95.5 gigagrams (1975 data) of VOC per year. The emissions of VOC result from usage of solvent-borne coatings by the industry. These paints contain organic solvent mixtures of aromatics, saturated and unsaturated aliphatics, alcohols, ketones, esters, and ethers. The emissions of these organic solvents contribute to ozone formation in urban atmospheres. EPA has established a National Ambient Air Quality Standard (NAAQS) for ozone of 0.12 microgram per cubic meter which is currently exceeded in those states where metal furniture manufacturing establishments are concentrated. Information concerning health and welfare effects associated with ozone can be found in "Air Quality Criteria for Ozone and Other Photochemical Oxidants," EPA–600/8–78–004, April 1978.

Moreover, the metal furniture industry is projected to have an annual growth rate of 4 percent. The growth rate is expected to remain at this level through 1985. Based on this growth, the industry will contribute increasing amounts of VOC to urban atmospheres.

Therefore, industrial surface coating of metal furniture was selected for regulation. This selection is based upon the metal furniture industry's priority listing, the number of affected facilities, painting method, the yearly VOC emission rate, the growth rate of the industry, and the location of this industry in or near highly populated urban areas.

Selection of Pollutants and Affected Facilities

Metal furniture manufacturers emit both particulate matter and VOC. Particulate matter is presently being controlled by the industry; however, VOC emissions are not controlled. They are emitted from the coating application, touch-up, flash-off, and bake oven areas. VOC emissions occur when the coating is applied and while the coated metal furniture part travels on a conveyor line through the application area. The coating on the metal furniture parts traveling on a conveyor line is the source of VOC in the flash-off and bake oven areas. The remainder of the operations at a metal furniture manufacturing plant are not included in the proposed standards because these are not significant sources of VOC. Touch-up operations are not included because they consume very little paint in comparison to the total amount of paint used in the coating application area. Clean-up operations would not be regulated under the proposed standards because VOC emissions from these operations are very difficult to quantify and control. Therefore, the affected facility is the combined coating application area, flash-off area, and bake oven area. This combination was selected as the affected facility because emissions from each area and their controls relate directly to the coating of the product.

The last consideration made concerning the affected facility was whether or not to establish a lower "cutoff" level of paint consumption in order to exempt smaller facilities from the proposed standards. The approach employed was to consider a cutoff level based on the amount of paint used or the capacity of the coating line. However, no cutoff level was established because of the possibility of wide variations in the amount of paint consumed yearly. The variability in the amount of paint consumed is a function of the economy. As a result, the consumption rate of paint may vary significantly from year to year. Several methods of determining the rated capacity of a coating line were investigated, but no decision was reached as to which would be most equitable. The Administrator specifically invites comments concerning this issue. Any comments submitted to the Administrator on this issue, however, should contain specific information and data pertinent to an evaluation of the magnitude and severity of any adverse impact and suggest alternative courses of action to avoid this impact.

Selection of Basis of Proposed Standards

Three control technologies were identified for reducing VOC emissions from metal furniture coating lines: (1) low-organic-solvent coatings, (2) transfer efficiency improvements based on coating application technique, and (3) emission control systems. Low-organic-solvent coatings include powder, high solids, and waterborne coatings. All of these coatings are presently being applied to metal furniture parts. None of the three types of coatings, however, are universally applicable for all metal furniture products because of differences in appearance needs, desired film thickness, required color changes, and other customer demands.

Powder coatings offer the largest emission reduction because they do not contain organic solvents. Powder coatings are applied by either electrostatic spraying devices or fluidized bed processes. Application of powder coatings to metal furniture parts by electrostatic spraying requires electrically charging the powder particles which are then attracted to the grounded part. In contrast, in the fluidized bed process the metal part is preheated, then dipped into a bed of air-fluidized particles. Both thermoset and thermoplastic powder coatings are being successfully applied in the metal furniture industry. Thermoset powders harden during heating as a result of cross-linking or polymerizing of the resin in the coating. Thermoplastic powders soften with the application of heat and resolidify during cooling. Powder coatings are normally selected when a thick and durable coating is required. However, thinner film thicknesses are now being achieved with thermoset powders. Powder coatings are applied electrostatically at thicknesses from 2.54×10^{-2} to 20.3×10^{-2} millimeters (1.0 to

8.0 mils). Coating thicknesses achieved with the fluidized bed process range from 15.2×10^{-2} to 152×10^{-2} millimeters (6.0 to 60 mils). Powder coatings cannot be used, however, at facilities requiring a large number (greater than 10) of color changes per day.

Coatings containing from 50 to 80 percent by volume solids are being applied to metal furniture parts instead of conventional solvent-borne coatings that contain 25 to 35 percent by volume solids. These coatings reduce VOC emissions by replacing much of the organic solvent with solids. For a 68 percent by volume solids coating, the VOC emission reduction achieved relative to an uncontrolled and a CTG coating is 73 and 30 percent, respectively. The use of coatings containing up to 68 percent solids is demonstrated in this industry with all applicable electrostatic spraying techniques, including guns, disks, and bells. Although coatings containing greater than 68 percent solids are currently being applied in the industry, their use has not been adequately demonstrated using a manual electrostatic spraying device. At present, the majority of the metal furniture industry using high solids coatings applies single-component heat-converted materials. These coatings form a film when they are cured inside an oven. Coating thicknesses achieved range from 2.54×10^{-2} to 3.81×10^{-2} millimeters (1.0 to 1.5 mils). Several metal furniture facilities using high solids coatings are complying with existing SIP regulations based upon the CTG-recommended coating. High solids coatings cannot be used, however, when a facility desires an especially thick coating or when the method of application is dip or flow coating.

Waterborne coatings are applied by spray, dip, electrodeposition, or flow techniques. All four application methods are used in the metal furniture industry. The majority of waterborne coatings currently applied contain about an 82/18 water-to-organic solvent ratio, with 35 percent by volume solids present in the paint. Waterborne coatings applied by the electrodeposition process usually contain less solids by volume. These coatings are able to achieve coating thicknesses comparable to conventional organic solvent-based coatings. Substitution of a typical waterborne coating applied by electrostatic spraying or dipping could be expected to reduce VOC emmissions relative to the uncontrolled and CTG-recommended facilities by about 80 and 50 percent, respectively. A waterborne coating applied by electrodeposition reduces VOC emissions for the uncontrolled and CTG-recommended facilities by about 95 and 85 percent, respectively. As with powder and high solids coatings, waterborne coatings cannot be used in all cases because of the limited film thicknesses achievable and the problems associated with electrostatically spraying such a highly conductive material.

The second control technology is improvement of transfer efficiency, based upon the method employed to apply the coating. Transfer efficiency defines the effectiveness at which solids are applied to the metal furniture part. The lower the transfer efficiency, the higher the VOC emission rates because more coating must be used to achieve the same thickness. The lowest transfer efficiencies reported range from 25 to 50 percent; these are for air and airless spraying equipment. Higher transfer efficiencies (60 to 95 percent) for spraying equipment are obtained with the electrostatic type equipment. The transfer efficiency of 60 percent represents the lower end of a range of efficiencies reported by paint suppliers and application equipment vendors. Therefore, 60-percent transfer efficiency was selected as the basis for the proposed standards. Although the highest transfer efficiencies are achieved with dip, electrodeposition, and flow coating techniques, about 85 percent of this industry uses traditional spraying techniques.

The only emission control system known to be in use in this industry is an incinerator, located at one plant. This incinerator is used to control VOC emissions from a bake oven. Incineration of VOC emissions is about 96 percent efficient. This efficiency was determined from stack test data obtained by EPA during the development of the proposed standard for automobile and light-duty truck surface coating operations.

Specific control options selected from the available control technologies include 65 and 70 percent by volume solids coatings, waterborne coatings, powder coatings, and a CTG-complying coating plus incineration. Based upon a comparison with CTG level of control (i.e., 60 percent by volume solids coating), four regulatory alternatives were established. These regulatory alternatives (labeled I, II, III, and IV) require, respectively, no additional control above the CTG (no NSPS), 30 percent above the CTG, 50 percent above the CTG, and 85 percent above the CTG.

All of the control option may be employed to achieve Regulatory Alternatives I and II. Regulatory Alternative III requires the use of waterborne coatings or a control options that provides equal or higher emission reduction.

Regulatory Alternative IV is based upon the highest emission reduction that may be achieved above the CTG-recommended level of control for a spray and dip coating line. The highest emission reduction for the spray coating line is about 99 percent (powder coatings), and the highest for a dip coating line is about 85 percent (waterborne applied by electrodeposition). As a result, VOC emission reduction above CTG-recommended requirements for Regulatory Alternative IV was established at 85 percent so that both powder and waterborne (electrodeposition) may be employed to achieve the designated emission reduction.

Environmental impacts were also evaluated for the four regulatory alternatives. None of the alternatives resulted in increased solid waste generation or decreased water quality. Also, when compared to uncontrolled facilities, there are energy savings possible with each regulatory alternative. The energy impact for a facility complying with the CTG-recommended level is about the same as that for each regulatory alternative.

For all regulatory alternatives the estimated total capaital costs are about the same. However, total annualized costs for the first 5 years of the proposed standards would vary depending on which control option is utilized to achieve the control level specified by each regulatory alternative. If coatings containing 60 to 70 percent by volume solids are employed to comply with Regulatory Alternatives I and II, there is a potential for annualized savings. Regulatory Alternative III results in the highest annualized costs if waterborne coatings are employed to achieve the required regulatory alternative.

The proposed standards are based on Regulatory Alternative II. This selection was based on the decision that all estimated impacts associated with Regulatory Alternative II were considered to be reasonable. This alternative also provides all facilities with at least one control option that could be used to comply with the proposed standards. Basing the proposed standards on an alternative that would require the use of waterborne or powder coatings would preclude the use of high solids coatings. This approach would prevent some facilities from complying with the proposed standards because of their inability to use powder or waterborne

coatings. Basing the proposed standards on the use of incineration was rejected because of the cost and energy impacts associated with this option. There is also a potential for an annualized cost saving with Regulatory Alternative II.

Selection of Format of Proposed Standards

A number of difference formats for the proposed standards are available. The format ultimately selected must be compatible with any of the control options that could be used to comply with the proposed standards. The formats considered were emission limits expressed in terms of: (1) the concentration of VOC emissions in the exhaust gases discharged to the atmosphere; (2) overall control efficiency; (3) mass of VOC emissions per unit of production; (4) mass of VOC emissions per volume of coating (less water); and (5) mass of VOC emissions per volume of coating solids applied.

The major advantage of a concentration format is simplicity of enforcement. Compliance could be directly measured using Reference Method 25. There are, however, two significant drawbacks to the use of this format. Regardless of the control approach chosen, emission testing would be required for each stack exhausting gases from the surface coating operations. Another potential problem with this format is the difficulty of determining whether dilution air is intentionally added to reduce the concentration of VOC in the gases discharged to the atmophere, or whether the air is added to the application or drying operations to optimize performance and maintain a safe working space. The concentration format therefore, is unacceptable.

A control efficiency format would require coating facilities to reduce emissions by a specified percentage. This has the advantage of allowing each facility to use whatever method is preferred to reduce the emissions. The disadvantage is that a baseline emission rate must be established for each facility to determine how much the emissions must be reduced to comply with the proposed standards. This baseline is likely to vary from plant to plant. In addition, this type of format would require well operated facilities to reduce emissions by the same percentage as poorly operated facilities. This could place the well-operated coating facilities at an economic disadvantage relative to their competitors. For these reasons, this format was not selected.

A format of mass of VOC emissions per unit of production would relate emissions to individual plant production on a direct basis. Where high solids or conventionally applied waterborne coatings are employed, the average VOC content of the coating materials could be determined by using Reference Method 24 or coating supplier's formulation. The volume of coating materials used and the percent solids could be determined from purchase records. VOC emissions could then be calculated by multiplying the VOC content of the coating materials by the volume of coating materials used in a given time period, and dividing the result by the number of furniture items produced during that time period. This would provide a VOC emission rate per unit of production. Consequently, procedures to determine compliance would be direct and straightforward. However, this procedure woud be very time consuming because it would require data collection every time the product mix was varied or a new part was added. In addition, this format would not account for the difference in surface coating requirements for various items due to size and configuration. This would result in a different emission standard for every piece of metal furniture coated. As a result, manufacturers of larger items would be required to reduce VOC emissions more than manufacturers of smaller items. For these reasons, this format was not selected.

The fourth format, mass of VOC emissions per volume of coating applied (minus water), is the one employed in the CTG document. The principal advantage of this format is that enforcement is relatively simple. However, one disadvantage is that transfer efficiency is not part of the format and as a result, a CTG or NSPS coating may emit more VOC than a non-complying coating because of the differences of obtainable transfer efficiencies due to different painting techniques. Also, it is difficult to determine a numerical limit for affected facilities using a new coating and add-on control equipment because this format does not consider transfer efficiency. As a result, this format was not selected.

The last format, which uses mass of VOC emissions per volume of coating solids applied, has the advantage of not requiring stack emission tests unless add-on emission control devices are used to comply with the proposed standards. Dilution air in the exhaust stream would not present a problem with this format. The problem of varyng part sizes and configurations would be eliminated because the format is in terms of volume of coating solids applied, which is independent of the surface area and number of items coated. This format would also allow flexibility in the selection of control systems because it is usable with any of the control methods. The format also takes into consideration the transfer efficiency of the coating technique. Because this format overcomes the varying dilution air and part size problems inherent with the other formats and considers transfer efficiency where other formats do not, it has been selected as the format for the proposed standards.

Selection of Numerical Emission Limit

The numerical emission limit selected for the proposed standards is 0.70 kilogram of VOC per liter of coating solids applied. This numerical emission limit is based on the selection of Regulatory Alternative II as the basis of the proposed standards. Regulatory Alternative II was previously defined as an additional 30 percent reduction in VOC emissions beyond that recommended in the CTG document. Establishing the numerical emission limit based upon Regulatory Alternative II permits each metal furniture manufacturer to select one of the available control options to achieve compliance. The numerical emission limit of the proposed standard could be calculated from the following conditions:

1. The use of a coating material containing 68 percent by volume solids.
2. The coating is applied at a transfer efficiency of 60 percent.
3. The solvents in the coating material have a density of 0.88 kilogram per liter.

These conditions are based on data provided by the metal furniture industry, and coating and application equipment vendors. Each of the conditions represents currently available technology which has been used successfully in the metal furniture industry.

For a coating system meeting the conditions stated above, the emission rate is calculated to be 0.70 kilogram of VOC per liter of coating solids applied. Due to the numerous emission reduction techniques available and the flexibility allowed by the format of the proposed standards, a variety of technologies may be used to meet the emission limit. The proposed standards can be achieved as a minimum by using any of the low-organic-solvent coatings, if applied electrostatically. Low-organic-solvent coatings applied by dip, flow, or electrodeposition techniques will also achieve the proposed numerical limit because of the high transfer efficiency of these methods. Powder coatings applied

by electrostatic spray or fluidized bed meet the proposed numerical limit. As a result, all of the control options can meet the proposed numerical limit.

Modification and Reconstruction Considerations

New source performance standards apply to modified and reconstructed, as well as to new facilities. Upon modification or reconstruction, an existing facility becomes an affected facility. The criteria for making modification and reconstruction determinations are presented in § 60.14 and § 60.15, respectively, of the general provisions of 40 CFR Part 60, and are applicable to all standards of performance promulgated under Section 111 of the Clean Air Act.

If the proposed standards go into effect, during the first 5 years there are expected to be about 2,000 affected facilities. Of these 2,000 affected facilities, approximately 60 percent are expected to be modified or reconstructed facilities, which would be required to comply with the proposed standards.

The metal furniture industry has expressed concern that expenditures made to comply with SIP requirements might bring the facility under the proposed standards as a reconstruction. The industry believes that it is unfair for compliance with one regulation to trigger coverage by a more stringent regulation. Comments are requested on the legality and economic consequences of an exemption from the reconstruction provisions under these circumstances. Any comments submitted to the Administrator, however, should contain specific information and data pertinent to an evaluation of the magnitude and severity of any adverse impact and suggested alternative courses of action that would avoid this impact.

Method of Determining Compliance

The procedure for determining monthly compliance with the proposed standards could vary depending on which control option is selected by the facility. The compliance determination procedure for all facilities begins as follows:

1. Calculate the mass of VOC, as applied, of all coating materials used during the calendar month for which the determination is being made. The data necessary to calculate the mass of VOC may be obtained from the coating formulator or through a coating analysis using Reference Method 24. When coating formulation data are used, the owner or operator must also include all dilution solvents added to the coating at the facility.

2. VOC emissions are then calculated by dividing the mass of VOC (step 1) by the multiplication product of the coating solids by volume applied and the appropriate transfer efficiency expressed as a decimal.

If the VOC emissions calculated in step 2 are greater than the proposed numerical emission limit, the facility is in violation of the proposed standards for the month and additional control is necessary. In situations where a lower solvent content coating or an increased transfer efficiency is used to bring the facility into compliance, the preceding steps are repeated in subsequent performance tests using the new set of conditions. However, if the facility chooses to achieve compliance by adding a control device, the following additional steps must be followed:

1. The initial compliance determination requires the use of Reference Method 25 to determine the VOC concentration in the effluent gas stream before and after the control device. Calculate the control efficiency of the device by using the test results.

2. Determine the percentage of the total VOC emissions from the facility which enter the emission control device.

3. Calculate the overall VOC emission reduction efficiency achieved by multiplying the percentage of VOC emissions which enter the control device (step 2) by the efficiency of the control device.

Detailed procedures, as well as the equations to be used for these calculations, are containd in the proposed standards. These procedures would require determining the VOC emissions from the coating materials used in each surface coating operation. This could be accomplished by periodic analysis of paint samples collected at the application area; however, such an analysis is expensive and time consuming. Paint companies routinely perform analyses of the solids and solvent content of the coatings they sell. This represents an inexpensive method of determining the VOC emissions from the coating. Therefore, a record of the coating supplier's coating formulation or analysis of the solvent and solids content of all coating materials purchased for each coating line within a plant would be required to be maintained. The Administrator would reserve the right to require Reference Method 24 testing to assure that compliance with the proposed standards is being achieved. This in itself, however, would not provide sufficient information to determine compliance because solvent paint dilutions may occur prior to paint application. In order to account for this, a record would also be required of all organic solvent which is purchased and used for the purpose of coating dilution by each coating line within the plant. This information would allow calculation of the total mass of VOC in all coatings consumed after viscosity control, thereby permitting determination of whether the applied coating formulation conforms to the requirements of the proposed standards.

Selection of Monitoring Requirements

Monitoring requirements are normally included in standards of performance to ensure that emission control requirements are met and that control devices are properly operated and maintained.

The owner or operator would be required to calculate and record the VOC emissions per volume of applied solids from each affected facility for each calendar month. Each monthly calculation would be considered a performance test. Where incineration is used to comply with the proposed standards, a monitoring device would be required to continuously record the combustion temperature of the control device. Following the performance test, the combustion temperature would be monitored and any period of more than 3 hours during which the temperature drops more than 50°C below the compliance test level would be reported quarterly.

Selection of Performance Test Methods

Performance tests would be required for add-on control devices to determine compliance with the proposed standards. Reference Method 25, "Determination of Total Gaseous Non-Methane Organic Emissions as Carbon," would be used to measure VOC concentration before and after the add-on control device. The estimated cost for conducting a test with this method before and after the control device is about $4,000.

The solids and organic solvent content of coatings would be determined based upon the paint supplier's coating formulation. However, Reference Method 24, "Determination of Volatile Organic Matter, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings," would be used to verify the paint supplier's data. This method combines several ASTM procedures which are published industry techniques.

Measurement of transfer efficiency would not be required for the proposed standards. Instead, transfer efficiency numbers are provided for each coating application technique. These numbers are based upon data collected from metal furniture manufacturers, paint

manufacturers, and paint application equipment manufacturers. However, if a manufacturer can justify to the Administrator's satisfaction that other values for transfer efficiencies are appropriate, the Administrator will approve their use on a case-by-case basis. In making this determination the Administrator will consider: (1) the surface area of all parts painted on the new coating line, (2) the number of parts painted, (3) the coating consumed and the procedures used to measure consumption, (4) the thickness of applied coating, and (5) the method of calculating transfer efficiency.

Impact of Reporting Requirements

During 1980 to 1985, there are expected to be about 2,000 affected facilities. The time required for compiling the initial compliance report for a typical spray painting plant (two coating lines) would be about 23 person-hours. The total time required by the industry for all of the affected facilities would be about 46,700 person-hours by 1985.

An additional report would be required for affected facilities that install a new add-on control device. For a typical plant the time required for performing the initial compliance test, compiling data and reviewing the test report would be about 400 person-hours. After the initial compliance test, the incinerator combustion temperature would be reported quarterly.

The Administrator specifically invites comments concerning the reporting requirements of the proposed standards. These requirements can be found in § 60.314 and § 60.315 of the proposed standards. Any comments submitted to the Administrator should contain specific information and data pertinent to an evaluation of the magnitude and severity of any adverse impact and should suggest alternative courses of action to avoid this impact. Recommended alternative reporting requirements should contain complete instructions and should state all the reasons why the recommended requirements would be considered an improvement.

Public Hearing

A public hearing will be held to discuss the proposed standards in accordance with Section 307(d)(5) of the Clean Air Act. Persons wishing to make oral presentations should contact EPA at the address given in the ADDRESSES section of this preamble. Oral presentations will be limited to 15 minute each. Any member of the public may file a written statement before, during, or within 30 days after the hearing. Written statements should be addressed to the Central Docket Section address given in the ADDRESSES section of this preamble.

A verbatim transcript of the hearing and written statements will be available for public inspection and copying during normal working hours at EPA's Central Docket Section in Washington, D.C. (see ADDRESSES section of this preamble).

Docket

The docket is an organized and complete file of all the information submitted to or otherwise considered in the development of this proposed rulemaking. The principal purposes of the docket are (1) to allow interested parties to readily identify and locate documents so that they can intelligently and effectively participate in the rulemaking process, and (2) to serve as the record in case of judicial review.

Miscellaneous

As prescribed by Section 111, establishment of standards of performance for surface coating of metal furniture was preceded by the Administrator's determination (40 CFR 60.16, 44 FR 49222, dated August 21, 1979), that these sources contribute signficantly to air pollution which may reasonably be anticipated to endanger public health or welfare. In accordance with Section 117 of the Act, publication of this proposal was preceded by consultation with appropriate advisory committees, independent experts, and Federal departments and agencies. The Administrator will welcome comments on all aspects of the proposed regulation, including economic and technological issues.

It should be noted that standards of performance for new sources established under Section 111 of the Clean Air Act reflect:

> * * * application of the best technological system of continuous emission reduction which (taking into consideration the cost of achieving such emission reduction, and nonair quality health and environmental impact and energy requirements) the Administrator determines has been adequately demonstrated [Section 111(a)(1)].

Although there may be an emission control technology available that can reduce emissions below those levels required to comply with standards of performance, this technology might not be selected as the basis of standards of performance due to costs associated with its use. Accordingly, standards of performance should not be viewed as the ultimate in achievable emission control. In fact, the Act requires (or has the potential for requiring) the imposition of a more stringent emission standard in several situations.

For example, applicable costs do not necessarily play as prominent a role in determining the "lowest achievable emission rate" (LAER) for new or modified source locating in nonattainment areas, i.e., those areas where statutorily-mandated health and welfare standards are being violated. In this respect, Section 173 of the Act requires that new or modified sources constructed in an area where ambient pollutant concentrations exceed NAAQS must reduce emissions to the level that reflects LAER, as defined in Section 171(3) for such category of source. The statute defines LAER as that rate of emissions based on the following, whichever is more stringent:

(A) the most stringent emission limitation which is contained in the implementation plan of any State for such class or category of source, unless the owner or operator of the proposed source demonstrates that such limitations are not achievable, or

(B) the most stringent emission limitation which is achieved in practice by such class or category of source.

In no event can the emission rate exceed any applicable new source performance standard [Section 171(3)].

A similar situation may arise under the prevention of significant deterioration of air quality provisions of the Act (Part C). These provisions require that certain sources [referred to in Section 169(1)] employ "best available control technology" (BACT) as defined in Section 169(3) for all pollutants regulated under the Act. Best available control technology must be determined on a case-by-case basis, taking energy, environmental and economic impacts, and other costs into account. In no event may the application of BACT result in emissions of any pollutants which will exceed the emissions allowed by any applicable standard established pursuant to Section 111 (or 112) of the Act.

In all events, SIPs approved or promulgated under Section 110 of the Act must provide for the attainment and maintenance of NAAQS designed to protect public health and welfare. For this purpose, SIPs must in some cases require greater emission reduction than those required by standards of performance for new sources.

Finally, States are free under Section 116 of the Act to establish even more stringent emission limits than those established under Section 111 or those necessary to attain or maintain the NAAQS under Section 110. Accordingly, new sources may in some cases be subject to limitations more stringent than standards of performance under Section 111, and prospective owners and

operators of new sources should be aware of this possibility in planning for such facilities.

This regulation will be reviewed four years from the date of promulgation as required by the Clean Air Act. This review will include an assessment of such factors as the need for integration with other programs, the existence of alternative methods, enforceability, and improvements in emission control technology and reporting requirements. The reporting requirements in this regulation will be reviewed as required under EPA's sunset policy for reporting requirements in regulations.

Section 317 of the Clean Air Act requires the Administrator to prepare an economic impact assessment for any new source standard of performance promulgated under Section 111(b) of the Act. An economic impact assessment was prepared for the proposed regulations and for other regulatory alternatives. All aspects of the assessment were considered in the formulation of the proposed standards to ensure that the proposed standards would represent the best system of emission reduction considering costs. The economic impact assessment is included in the Background Information Document.

Dated: November 21, 1980.

Douglas M. Costle

Administrator.

It is proposed that 40 CFR Part 60 be amended by adding a new Subpart EE as follows:

Subpart EE—Standards of Performance for Surface Coating of Metal Furniture

Sec.

60.310 Applicability and designation of affected facility.
60.311 Definitions and symbols.
60.312 Standards for volatile organic compounds.
60.313 Performance tests and compliance provisions.
60.314 Monitoring of emissions and operations.
60.315 Reporting and recordkeeping requirements.
60.316 Test methods and procedures.

Authority: Secs. 111, 114, and 301(a) of the Clean Air Act, as amended, (42 U.S.C. 7411, 7414, 7601(a)), and additional authority as noted below.

Subpart EE—Standards of Performance for Surface Coating of Metal Furniture

§ 60.310 Applicability and designation of affected facility.

(a) The affected facility to which the provisions of this subpart apply is the volatile organic compound (VOC) emitting portion of each metal furniture surface coating line which is defined as the paint application area, the flash-off area, and the bake oven area.

(b) This subpart applies to any affected facility on which construction, modification, or reconstruction is commenced after November 28, 1980.

§ 60.311 Definitions and symbols.

(a) All terms used in this subpart not defined below are given meaning in the Act and in Subpart A of this part.

"Bake oven" means a device which uses heat to dry or cure coatings.

"Dip coating" means a method of applying coatings in which the part is submerged in a tank filled with the coatings.

"Electrodeposition (EDP)" means a method of applying coatings in which the part is submerged in a tank filled with the coatings and in which an electrical potential is used to enhance deposition of the coatings on the part.

"Electrostatic spray application" means a spray application method that uses an electrical potential to increase the transfer efficiency of the coatings.

"Flash-off area" means the portion of a surface coating line between the coating application area and bake oven.

"Flow coating" means a method of applying coatings in which the part is carried through a chamber containing numerous nozzles which direct unatomized streams of coatings from many different angles onto the surface of the part.

"Spray application" means a method of applying coatings by atomizing and directing the atomized spray toward the part to be coated.

"Transfer efficiency" means the ratio of the amount of coating solids transferred onto the surface of a part or product to the total amount of coating solids used.

"VOC content" means all volatile organic compounds (VOC) that are in coatings and evaporate during the application, drying, or curing process. VOC are expressed in terms of kilograms of VOC per liter of coating solids applied.

(b) All symbols used in this subpart not defined below are given meaning in the Act and in Subpart A of this part.

C_{aj} = concentration in gas stream in the "jth" vent after control device (parts per million as carbon)

C_{bi} = concentration in gas stream in the "ith" vent before control device (parts per million as carbon)

C_k = concentration in gas stream in the "kth" uncontrolled vent (parts per million as carbon)

D_{ci} = density of the "ith" coating (kilogram per liter)

D_{dj} = density of the "jth" diluent VOC-solvent (kilogram per liter)

D_r = density of VOC-solvent recovered by emission control device (kilogram per liter)

E = emission control device efficiency (inlet versus outlet, fraction)

F = capture efficiency (captured versus potential, fraction)

G = weighted average mass of VOC per volume of coating solids applied (kilograms of VOC per liter of coating solids applied)

i = indexing subscript designating the "ith" coating or "ith" vent before control device, ranges from 1 to n

j = indexing subscript designating the "jth" diluent VOC-solvent or the "jth" vent after control device, ranges from 1 to m

k = indexing subscript designating the "kth" uncontrolled vent, ranges from 1 to n

L_{ci} = volume of "ith" coating, as received (liters)

L_{dj} = volume of "jth" diluent VOC-solvent added to coating (liters)

L_r = volume of VOC-solvent recovered by emission control device (liters)

L_s = volume of coating solids (liters)

M_d = mass of VOC-solvent added to coating for dilution purposes (kilograms)

M_o = mass of VOC-solvent in coating, as received (kilograms)

M_r = mass of VOC-solvent recovered by emission control device (kilograms)I16L_{ci}=volume of "ith" coating, as received (liters)

L_{dj}=volume of "jth" diluent VOC-solvent added to coating (liters)

L_r=volume of VOC-colvent recovered by emission control device (liters)

L=volume of coating solids (liters)

M_d=mass of VOC-solvent added to coating for dilution purposes (kilograms)

M_o=mass of VOC-solvent in coating, as received (kilgrams)

M_r=mass of VOC-solvent recovered by emission control device (kilograms)

m=a known variable quantity of different diluent VOC-solvents or controlled vents

N=VOC emissions (kilograms of VOC per liter of coating solids applied)

n=a known variable quantity of coatings or vents

Q_{aj}=volumetric flow rate in the "jth" vent after control device (dry standard cubic meters per second)

Q_{bi}=volumetric flow rate in the "ith" vent before control device (dry standard cubic meters per second)

Q_k=volumetric flow rate in the "kth" uncontrolled vent (dry standard cubic meters per second)

R=overall VOC emission reduction efficiency (fraction)

T = transfer efficiency for each surface coating application method (fraction)
V_{si} = volume fraction of solids in the "ith" coating, as received (fraction)
W_{oi} = weight fraction of VOC-solvent in the "ith" coating, as received (fraction)
z = indexing subscript designating the "zth" control device

§ 60.312 Standards for volatile organic compounds (VOC).

(a) On and after the date on which the initial performance test required to be conducted by § 60.8(a) is completed, no owner or operator subject to the provisions of this subpart shall cause the discharge into the atmosphere of VOC emissions from any metal furniture coating line in excess of 0.70 kilogram of VOC per liter of coating solids applied.

§ 60.313 Performance tests and compliance provisions.

(a) Sections 60.8(d) and (f) do not apply to the performance test procedures required by this subpart.

(b) Each owner or operator of an affected facility shall conduct a performance test for each calendar month for each affected facility according to the procedures in this section, except as specified in § 60.315.

(1) Each owner or operator shall compute the weighted average mass of VOC per volume of coating solids applied for each month except as specified in § 60.313(c) and (d). Each monthly calculation is considered a performance test for the purposes of this subpart. Each owner or operator shall determine the composition of the coatings or by formulation data suppplied by the manufacturer of the coating or by analysis of each coating by Reference Method 24. The Administrator may require an owner or operator who uses manufacturer's formulation data to determine the VOC content of the coatings by Reference Method 24 or an equivalent or alternative method acceptable to the Administrator. Each owner or operator shall determine the coating and dilution solvent usage from company records. Each owner or operator shall obtain the density of each dilution solvent from the supplier of the dilution solvents. The weighted average mass of VOC per volume of coating solids applied for each month will be determined by the following procedures.

(2) Compute the mass of VOC from all coating materials, as applied, in any surface coating operation by the equation:

$$M_o + M_d = \sum_{i=1}^{n} L_{ci} D_{ci} W_{oi} + \sum_{j=1}^{n} L_{dj} D_{dj}$$

(3) Compute the total volume of coating solids used during each month by the equation:

$$L_s = \sum_{i=1}^{n} L_{ci} V_{si}$$

(4) Compute the weighted average mass of VOC per volume of coating solids applied by the equation:

$$G = \frac{M_o + M_d}{L_s T}$$

Values for transfer efficiency (fraction) are to be selected from the following table:

Application method	Transfer efficiency (T)
Air atomized spray	0.25
Airless spray	0.25
Manual electrostatic spray	0.60
Nonrotaional automatic electrostatic spray	0.70
Rotating head electrostatic spray (manual and automatic)	0.80
Dip coat	0.90
Flow coat	0.90
Electrodeposition	0.95
Powder application	0.95

If the owner or operator can justify to the Administrator's satisfaction that other values for transfer efficiencies are appropriate, the Administrator will approve their use on a case-by-case basis. Where more than one application method is used on an individual surface coating operation, the owner or operator shall perform an analysis to determine the relative volume of coating solids materials applied by each method. The owner or operator shall use these relative volumes of solids to compute a weighted average transfer efficiency for the operation. The Administrator will review and approve this analysis on a case-by-case basis.

(5) For affected facilities with no add-on control devices, N = G
Where N is less than or equal to 0.70 kilogram of VOC per liter of coating solids applied, compliance with § 60.312 is demonstrated and no further calculations are required.

(6) For affected facilities where N is greater than 0.70 kilogram of VOC per liter of coating solids applied, the facility is not in compliance with § 60.312. Compliance with § 60.312 may be achieved by a change to a lower-organic-solvent content type of coating material, through an increase in transfer efficiency or through the addition of an add-on control device.

(i) If an affected facility selects a change of coating materials, compliance must be demonstrated by performing the calculations described in § 60.313(b)(1), (2), (3), (4), and (5).

(ii) If compliance is to be demonstrated through an increase in transfer efficiency, the calculations described in § 60.313(b)(4) and (5) must be performed.

(iii) Where add-on emission control equipment is used, the control efficiency must be calculated as described in § 60.313(c) or (d):

(c) Each owner or operator subject to the provisions of this subpart, who uses an incinerator, shall determine compliance by the following procedures.

(1) The owner or operator shall use Reference Method 25 to determine the VOC concentration in the effluent gas before and after the emission control device for each stack that is equipped with an emission control device. The owner or operator shall use Reference Method 2 to determine the volumetric flow rate of the effluent gas before and after the emission control device on each stack.

(2) The owner or operator shall determine the fraction efficiency of each emission control device by the following equation:

$$E_z = \frac{\sum_{i=1}^{n} Q_{bi} C_{bi} - \sum_{j=1}^{m} Q_{aj} C_{aj}}{\sum_{i=1}^{n} Q_{bi} C_{bi}}$$

(3) The owner or operator shall determine capture efficiency of the incinerator by calculating the fraction of total VOC discharged from the surface coating line which enters each emission control device on that operation by the following equation:

$$F_z = \frac{\sum_{i=1}^{n} Q_{bi} C_{bi}}{\sum_{i=1}^{n} Q_{bi} C_{bi} + \sum_{k=1}^{m} Q_k C_k}$$

(4) The owner or operator shall determine the overall emission reduction efficiency of incineration systems by the following equation:

$$R = \sum_{z=1}^{n} E_z F_z$$

(5) The owner or operator shall determine the mass of VOC per volume of coating solids applied emitted after the control device(s) on the applicable surface coating line using the following equation:

$$N = G(1-R)$$

(6) For affected facilities where N is less than or equal to 0.70 kilogram of VOC per liter of coating solids applied, compliance with § 60.312 is demonstrated and no further calculations are required.

(7) For affected facilities where N is greater than 0.70 kilogram of VOC per liter of coating solids applied, the facility is not in compliance with § 60.312 for the month and additional control is required to bring the facility into compliance for future operation.

(d) Each owner or operator subject to the provisions of this subpart, who uses an emission control system that recovers the VOC in order to comply with § 60.312, shall determine compliance for each calendar month by the following procedures:

(1) Calculate the weighted average mass of VOC per volume of coating solids applied emitted after the control device(s) on the applicable surface coating line using the following procedure:

(i) Calculate the total mass of VOC recovered in the calendar month (kilograms) by the equation:

$$M_r = L_r D_r$$

(ii) Calculate the overall emission reduction efficiency of the solvent recovery system by the equation:

$$R = \frac{M_r}{M_o + M_d}$$

(iii) Calculate mass of VOC emitted by the equation:

$$N = G(1-R)$$

(2) For affected facilities where N is less than or equal to 0.70 kilogram of VOC per liter of coating solids applied, the facility has demonstrated compliance with § 60.312 and no further calculations are required.

(3) For affected facilities where N is greater than 0.70 kilogram of VOC per liter of coating solids applied, the facility is not in compliance with § 60.312 for the month and additional control is required to bring the facility into compliance for future operation.

§ 60.314 Monitoring of emissions and operations.

(a) The owner or operator of an affected facility which uses an incinerator to comply with the emission limits specified under § 60.312 shall install, calibrate, maintain, and operate temperature measurement devices acording to the following procedures:

(1) A temperature measurement device shall be installed in the firebox of each incinerator.

(2) Each temperature measurement device shall be installed, calibrated, and maintained according to accepted practice and the manufacturer's specifications. Each device shall have an accuracy of the greater of ± 0.75% of the temperature being measured expressed in degrees Celsius or ± 2.5°C.

(3) Each temperature measurement device shall be installed in a location that is representative of the temperature in the firebox of each incinerator.

(4) Each temperature measurement device shall be equipped with a recording device so that a permanent continuous record is produced.

(b) For the purposes of reports required under § 60.315, periods of excess emissions for incinerators are defined as any period of 3 hours or longer during which the average incinerator temperature, when the coating line is in operation, is more than 28° C (50° F) less than the average incinerator temperature during the most recent performance test at which the emission control device efficiency was determined as specified under § 60.313(c).

§ 60.315 Reporting and recordkeeping requirements.

(a) Each owner or operator of an affected facility shall include the following data in the initial performance test report required under § 60.8:

(1) Where compliance is achieved without the use of add-on control devices, the owner or operator shall report for each affected facility the weighted average mass of VOC per volume of coating solids applied during the calendar month.

(2) Where compliance is achieved through the use of incineration, the owner or operator shall include the following data in the initial performance test required under § 60.8(a) or subsequent performance tests during which Reference Method 25 is utilized.

(i) The combustion temperature,

(ii) The weighted average mass of VOC per volume of coating solids applied before and after the incinerator,

(iii) Capture efficiency,

(iv) The emission control device efficiency used to attain compliance with the applicable emission limit specified under § 60.312.

(b) Following the initial performance test report, each owner or operator of an affected facility shall record the weighted average mass of VOC per volume of coating solids applied for each affected facility during each calendar month and shall report within 10 calendar days each instance in which the weighted average is greater than the limit specified in § 60.312. Each monthly determination shall be considered a performance test.

(c) Where compliance with § 60.312 is achieved through the use of incineration,

the owner or operator shall continuously record the incinerator combustion temperature and report on a quarterly basis any periods of excess emissions which occurred during each month or submit a report indicating that no periods of excess emissions occurred.

(d) Where compliance with § 60.312 is achieved through the use of a solvent recovery system, the owner or operator shall record and maintain daily records of the amount of solvent recovered by the system for each affected facility.

(e) Each owner or operator subject to the provisions of this subpart shall maintain at the source, for a period of at least 2 years, all records, data, and calculations which were used to determine the VOC content of coatings and the weighted average mass of VOC per volume of coating solids applied for each affected facility.

(Sec. 114 of the Clean Air Act, as amended (42 U.S.C. 7414))

§ 60.316 Test methods and procedures.

(a) The reference methods in Appendix A to this part except as provided under § 60.8(b) shall be used to determine compliance with § 60.312 as follows:

(1) Method 24, or coating manufacturer's formulation date, for use in the determination of VOC content of each batch of coating as applied to the surface of the metal parts.

(2) Method 25 for the measurement of VOC concentration in the effluent gas entering and leaving the control device for each stack equipped with an emission control device.

(3) Method 1 for sample and velocity traverses.

(4) Method 2 for velocity and volumetric flow rate.

(5) Method 3 for gas analysis.

(6) Method 4 for stack gas moisture.

(b) For Method 24, the coating sample must be at least a 1 liter sample taken at a point where the sample will be representative of the coating material as applied to the surface of the metal part.

(c) For Method 25, the minimum sampling time for each run is 60 minutes and the minimum sample volume is 0.003 dry standard cubic meters except that shorter sampling times or smaller volumes, when necessitated by process variables or other factors, may be approved by the Administrator.

(Sec. 114 of the Clean Air Act, as amended (42 U.S.C. 7414))

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